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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,827	04/12/2001	Martin Kowatsch	Q64035	1954

7590

05/09/2003

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EXAMINER

PAK, SUNG H

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 05/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n N .

09/832,827

Applicant(s)

KOWATSCH, MARTIN

Examiner

Sung H. Pak

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 8/8/2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Applicant's amendment filed 8/8/2002 has been reviewed and all changes to the claims have been entered. All pending claims have been carefully reconsidered by the examiner, however they are not deemed patentable. Please refer to Remarks for details. Previous ground of rejection has been changed in response to the amendment, and therefore the action is made final.

### ***Information Disclosure Statement***

In view of the information disclosure statement filed 8/8/2002, all cited references have been considered by the examiner. Please refer to PTO-1449 enclosed herewith.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Travieso et al (US 5,943,455) in view of Ehrfeld et al ("Integrated Optics and Micro-Optics with Polymers").

Travieso et al discloses an optical waveguide structure with all the limitations set forth in the claims, including: a crossing and a branching; a planar waveguide in the area of the branching ("10" in Fig. 2); the planar waveguide comprising a waveguiding

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material that is put into paths formed in a substrate; the waveguide material having a refractive index higher than the material delimiting the paths so as to form light guiding paths (column 1 lines 16-59, column 3 lines 50-63); optical fibers that cross in the area of crossing (Fig. 2).

Travieso et al discloses an optical waveguide structure with all the limitations set forth in the claims as discussed above, except it does not explicitly discuss the use of waveguide material in polymer substrate, and optical waveguide at least partially inserted into substrate.

Ehrfeld et al, on the other hand, teaches the use of polymer substrate and waveguide material, in which the troughs are stamped on the polymer substrates and the waveguide material is filled in to the troughs to form the waveguiding paths (Fig. 4 and pages 214-215). Also Ehrfeld et al discloses an optical fiber being at least partially inserted into the substrate troughs (Fig. 1 on page 212- fiber troughs formed continuous with waveguide troughs) Such provisions are advantageous because it allows for simple and cost effective manufacturing of planar waveguides, as compared to the production of optical crystals and fabrication of waveguiding paths via photolithographic processes. And, forming the optical fiber troughs continuously with the waveguide troughs allows for accurate alignment between the optical waveguides and optical fibers. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Travieso et al device to have polymer substrate and waveguiding material. It would have been desirable to have simple and cost effective planar waveguide device.

Regarding claim 10, Ehrfeld et al does not explicitly teach the use of UV radiation for curing the waveguide material. However, such technique is well known and commonly used in the polymer waveguide art. UV radiation curing is advantageous over the prior art heating method because it allows for selective application of optical energy to only the waveguide portion of the substrate, so as to minimize any potential damage and weakening of the substrate. Therefore, it would have been obvious to a person of ordinary skill in the art to use UV radiation for curing the waveguide material.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Travieso et al in view of Ehrfeld et al, as applied above, in further view of Itoh et al (US 6,115,515).

Travieso et al and Ehrfeld et al disclose optical waveguide structures with all the limitations set forth in the claims as discussed above, except they do not teach the use of opto-electrical transducers to connect the waveguide structure to a circuit board.

Itoh et al, on the other hand, explicitly teaches the use of opto-electronic components to couple optical waveguide device to the mounting circuit structure (Fig. 4, column 5 line 32- column 6 line 35). Such arrangement is advantageous in providing compact and efficient coupling between electrical circuit component and optical waveguide communications device. Therefore, it would have been obvious to a person of ordinary skill in the art to modify Travieso et al device to have opto-electronic transducer coupling the waveguide structure to the electronic circuit component. It

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would have been desirable to have a compact and efficient opto-electric coupling component.

***Remarks***

Rejections of claims 1-2, and 5:

Independent claims 1 and 5 have been amended, and the applicant argues that Travieso et al reference does not disclose the optical fiber being at least partially inserted into the "troughs" on the substrate, as recited in the claims. Previous ground of rejection has been changed in response to the amendment, and the applicant's argument is now moot.

Rejections of claims 3-4, 7-11:

With regard to claim 7, applicant argues that "neither the Travieso or Ehrfeld references ... teach or suggest a method of producing an optical waveguide structure having, inter alia, fibers in a portion of the troughs..." (page 5 of the applicant's amendment) The examiner respectfully points out that Ehrfeld does teach optical fibers disposed in the troughs of the optical waveguide substrate, in which the troughs of optical fibers are formed continuously with the optical waveguide troughs (compare Fig. 1 of Ehrfeld with Fig. 1 of the instant application). Such an arrangement has been commonly used in the art to accurately align optical fibers with planar optical waveguides. Therefore, it would have been obvious to a person of ordinary skill in the

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art at the time the invention was made to modify Travieso device to have optical fibers at least partially inserted in to the troughs of the device substrate.

Rejection of claim 6:

Rejection of claim 6 is still proper for the reasons discussed above.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

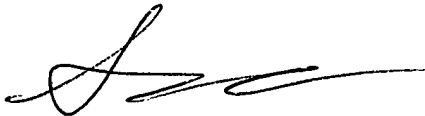
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (703) 308-

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4880. The examiner can normally be reached on Monday - Thursday : 6:30am-5:00pm.


The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Sung H. Pak  
Examiner  
Art Unit 2874

sp  
April 25, 2003



Rodney Bovernick  
Supervisory Patent Examiner  
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